

CHAPTER 7

IMPLEMENTATION

Introduction

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INTRODUCTION

Achieving clean air objectives requires the effective and timely implementation of the measures defined in Chapter 4. In general, these measures rely on the application and advancement of technologies and management practices. These strategies also require actions by numerous agencies. This chapter presents the adoption and implementation schedule of the control measures proposed in the Plan and delineates each agency's area of responsibility. Implementation support activities are also discussed.

RESPONSIBLE AGENCIES

Implementation of the Plan's strategies requires a cooperative partnership of governmental agencies at the federal, state, regional and local level. As described in Table 7-1, these agencies form the four cornerstones from which implementation programs will evolve.

At the federal level is the U.S. EPA and other agencies charged with reducing emissions from federally controlled sources such as commercial aircraft, trains, and marine vessels. As discussed in Chapter 4, the draft 2003 AQMP incorporates several measures carried over from the 1997 AQMP and 1999 Amendment to the 1997 Ozone SIP.

At the state level is CARB which is responsible for motor vehicle emissions, fuels, and consumer products. The Plan's on-road and off-road mobile source control program is principally based on CARB's proposed control measures. Also, California's inspection and maintenance program for on-road vehicles is administered by the Bureau of Automotive Repair (BAR).

At the regional level, the District is responsible for the overall development and implementation of the AQMP. The District is specifically authorized to reduce the emissions from stationary point, and some area sources such as coatings and industrial solvents. Emission reductions are also sought through funding programs designed to provide monies for the purchase of new low-emission equipment and vehicles and the retrofit of existing off-road sources to low-emission alternatives. In addition, the district regulates indirect sources under Health and Safety Code 40716 by implementing a mandatory ride sharing program or equivalent mobile source emission reduction alternative program for large employers. As a means of achieving further emission reductions, the District is seeking additional authority to regulate sources that have not been under the District's jurisdiction in the past such as marine vessels, consumer products, and other on-road and off-road sources. The District implements its responsibilities with participation from the regulated community through an extensive rule development and implementation program. This approach maximizes the input of

those parties affected by the proposed rule through consultation meetings, public workshops, and ongoing working groups.

At the regional level, the Southern California Association of Governments (SCAG) assists sub-regional and local governments in playing a formative role in the air quality elements of transportation planning. In addition, local governments serve an important role in developing and implementing the Plan's transportation control measures. SCAG is responsible for providing the socioeconomic forecast (e.g., population and growth forecasts) upon which the Plan is based. SCAG also provides assessments for conformity of regionally significant transportation projects with the overall Plan and is responsible for the adoption of the Regional Transportation Plan (RTP) and the Regional Transportation Improvement Program (RTIP) which include growth assumptions and transportation improvement projects that could have significant air quality impacts.

TABLE 7-1
Agencies Responsible for Implementation
of the 2003 AQMP Revision for the South Coast Air Basin

Agency	Principal responsibilities
EPA	<ul style="list-style-type: none">• Forty-nine state mobile vehicle emission standards;• Airplanes, trains, and ships;• New off-road construction & farm equipment below 175 hp;
ARB	<ul style="list-style-type: none">• On-road/Off-road vehicles• Motor vehicle fuels; and,• Consumer products
SCAQMD	<ul style="list-style-type: none">• Stationary (e.g., industrial/commercial) and area sources;• Indirect sources• Some mobile sources (e.g., visible emissions from trains and ships)
SCAG	<ul style="list-style-type: none">• AQMP conformity assessment• Regional Transportation Improvement Program
Local Government/ CTCs	<ul style="list-style-type: none">• Transportation and local government actions; and,• Transportation facilities

CONTROL MEASURES

The Plan proposes measures that can be implemented using currently available technologies and management practices as well as a long-term strategy necessary to meet attainment of the ozone standard. Control measures are to be implemented by all levels of government including federal agencies, the state ARB, the District and local governments and SCAG.

Control Measure Ranking

The California Clean Air Act requires air pollution control districts to assess the effectiveness of control measures in reducing ambient ozone concentrations as part of their plan submittals. The CCAA requires districts to determine that their AQMPs are cost-effective strategies that attain air quality standards by the earliest practicable date [H&SC 40913(b)]. In addition, plans must include an assessment of the cost-effectiveness of available and proposed control measures and a list of the measures ranked from the least cost-effective to the most cost-effective [H&SC 40922(a)]. Tables 6-6 and 6-7 in Chapter 6 show the ranking of the control measures by cost-effectiveness. In developing their control strategy implementation schedule, districts must consider the other effectiveness criteria including technological feasibility, total emissions reduction potential, rate of reduction, public acceptability, and enforceability [H&SC 40922(b)]. The criteria used for this Plan are listed in Table 7-2.

Table 7-3 lists the control measures, the responsible agency, and the proposed adoption and implementation dates. New items proposed for the first time in this Plan have been placed in the appropriate position on the existing schedule based on a review of the AQMP control measure prioritization factors described above.

Federal Agencies

Under CARB's proposed state and federal element, several control measures target reductions from federal sources. These measures are listed in Table 7-3. These control measures need to be further developed through a collaborative process between CARB and U.S. EPA. A contingency plan has been incorporated into the draft 2003 AQMP in the event that the federal government does not control sources under its jurisdiction.

CARB

CARB is also responsible for adopting on- and off-road mobile source emission standards, fuel requirements, and consumer product regulations. Table 7-3 identifies the

control measures and their adoption and implementation dates that CARB will be responsible for implementing in the draft 2003 AQMP.

TABLE 7-2
Criteria for Evaluating 2003 AQMP Control Measures

Criteria	Description
Cost-Effectiveness	The cost of a control measure to reduce air pollution by one ton [cost covers obtaining, installing, and operating the control measure].
Efficiency	The positive effects of a control measure compared to its negative effects.
Emission Reduction Potential	The total amount of pollution that a control measure can actually reduce.
Enforceability	The ability to force polluters to comply with a control measure.
Equity	The fairness of the distribution of all the positive and negative effects among various socioeconomic groups
Legal Authority	Ability of the District or other adopting agency to implement the measure or the likelihood that local governments and agencies will cooperate to approve a control measures
Public Acceptability	The support the public gives to a control measure.
Rate of Emission Reduction	The time it will take for a control measure to reduce a certain amount of air pollution.
Technological	The likelihood that the technology for a control measure will be available as anticipated.

TABLE 7-3

2003 AQMP Control Measures, Implementing Agency,
Adoption Date and Implementation Period

Control Measure Number	Control Measure Name	Implementing Agency	Adoption Date	Implementation Period
<u>Surface Coating and Solvent Use</u>				
CTS-07	Further Emission Reductions from Architectural Coatings and Cleanup Solvents (Rule 1113) (VOC)	SCAQMD	2003	2006-2008
CTS-10	Miscellaneous Industrial Coatings & Solvent Operations (Regulations IV and XI) (VOC)	SCAQMD		
	Phase I		2003	2005-2007
	Phase II		2004	2006-2008
	Phase III		2005	2007-2010
<u>Petroleum Operations and Fugitive Emissions</u>				
FUG-05	Emission Reductions from Fugitive Emission Sources (VOC)	SCAQMD		
	Phase I		2002	2003
	Phase II		2003	2005-2008
<u>Combustion Sources</u>				
CMB-07	Emission Reductions from Petroleum Refinery Flares (All)	SCAQMD	2004	2005
CMB-09	Emission Reductions from Petroleum Refinery FCCUs (PM10)	SCAQMD	2003	2006-2008
CMB-10	Additional NO _x Reductions for RECLAIM (NO _x)	SCAQMD	2004	2006-2010
<u>Fugitive Dust</u>				
BCM-07	Further PM10 Reductions from Fugitive Dust Sources (PM10)	SCAQMD	2004	2006
BCM-08	Further Emission Reductions from Aggregate and Cement Plant Manufacturing Operations (PM10)	SCAQMD	2004	2006

TABLE 7-3 (continued)

Control Measure Number	Control Measure Name	Implementing Agency	Adoption Date	Implementation Period
<u>Miscellaneous Sources</u>				
MSC-01	Promotion of Lighter Color Roofing and Road Materials and Tree Planting Programs (All Pollutants)	SCAQMD, Local Government	on-going	on-going
MSC-03	Promotion of Catalyst-Surface Coating Technology Programs (All Pollutants)	SCAQMD	on-going	on-going
MSC-04	Emission Reductions from Miscellaneous Ammonia Sources (NH ₃)	SCAQMD	N/A	2003-2006
MSC-05	Truck Stop Electrification (All)	SCAQMD	2005	2007-2010
MSC-06	Emission Reductions from Wood-Burning Fireplaces & Wood Stoves (PM10)	SCAQMD	2005	2006
MSC-07	Natural Gas Fuel Specifications (NO _x)	SCAQMD	2005	2007-2010
MSC-08	Further Emission Reductions from Large VOC sources (VOC)	SCAQMD	N/A	2003-2010
PRC-03	Emission Reductions from Restaurant Operations (VOC, PM10)	SCAQMD	2003-2004	2004 (new) 2005 (retrofits)
PRC-07	Industrial Process Operations (VOC) Phase I Phase II	SCAQMD	2004 2005	2006-2007 2008-2010
WST-01	Emission Reductions from Livestock Waste (VOC, PM10, Ammonia)	SCAQMD	2003	2004-2006
WST-02	Emission Reductions from Composting (VOC, Ammonia)	SCAQMD	2003	2006-2008
FSS-04	Emission Charges of \$5,000 per Ton of VOC for Stationary Sources Emitting Over 10 Tons per Year (VOC)	SCAQMD	Post-2010	Post-2010
<u>Compliance Flexibility Programs</u>				
FLX-01	Economic Incentive Programs (All)	SCAQMD	on-going	on-going

TABLE 7-3 (continued)

Control Measure Number	Control Measure Name	Implementing Agency	Adoption Date	Implementation Period
<u>District's Mobile Source Control Measures</u>				
FSS-05	Mitigation Fee Program for Federal Sources (All)	SCAQMD	2005	2010
FSS-06	Further Emission Reductions from In-Use Off-Road Mobile Vehicles and Equipment (All)	SCAQMD	2005	2007-2010
FSS-07	Emission Fee Program for Port-Related Mobile Sources (All)	SCAQMD	2006	2008-2010
<u>District's Long-Term Control Measures</u>				
LTM-All	Long-Term Control Measure (VOC)	SCAQMD		
	Tier I		2005-2007	2007-2009
	Tier II		2006-2008	2008-2010
<u>Transportation Control Measures</u>				
TCM-1A	HOV Improvements (All)	SCAG, Local Gov't	2002	2005-2025
TCM-1B	Transit & Systems Management	SCAG, Local Gov't	2002	2010-2025
TCM-1C	Information Based Measures	SCAG, Local Gov't	2002	2010-2025
<u>On-Road Mobile Source Control Measures</u>				
LT/MED-DUTY-1	Replace or Upgrade Emission Control Systems on Existing Passenger Vehicles – Pilot Program.	CARB	2005	2007-2008
LT/MED-DUTY-2	Smog Check Improvements	BAR	2003-2009	2003-2010
ON-RD HVY-DUTY-1	Augment Truck and Bus Highway Inspections with Community-Based Inspections	CARB	2003	2005

TABLE 7-3 (continued)

Control Measure Number	Control Measure Name	Implementing Agency	Adoption Date	Implementation Period
ON-RD HVY-DUTY-2	Capture and Control Vapors from Gasoline Cargo Tankers	CARB	2003	2004-2005
ON-RD HVY-DUTY-3	Pursue Approaches to Clean Up the Existing Truck/Bus Fleet – PM In-Use Emission Control, Engine Software Upgrade, On-Board Diagnostics, Manufacturers' In-Use Compliance, Reduced Idling	CARB/U.S.EPA	2003-2005	2004-2010
<u>Off-Road Mobile Source Control Measures</u>				
OFF-RD CI-1	Set Lower Emission Standards for New Off-Road Compression Ignition Engines	CARB	2004	2007-2015
OFF-RD CI-1	Set Lower Emission Standards for New Off-Road Compression Ignition Engines	U.S.EPA	2004	2007-2015
OFF-RD CI-2	Pursue Approaches to Clean Up the Existing Heavy-Duty Off-Road Equipment Fleet (Compression Ignition Engines) – Retrofit Controls	CARB	2004-2008	2006-2010
OFF-RD CI-3	Registration and Inspection Program for Existing Off-Road Equipment to Detect Excess Emissions (Compression Ignition Engines)	CARB	2006-2009	2010
OFF-RD LSI-1	Set Lower Emission Standards for New Off-Road Gas Engines (Spark Ignited Engines 25 hp and Greater)	CARB	2004-2005	2007
OFF-RD LSI-2	Clean Up Existing Off-Road Gas Equipment Through Retrofit Controls (Spark-Ignition Engines 25 hp and Greater)	CARB	2004	2006-2012

TABLE 7-3 (continued)

Control Measure Number	Control Measure Name	Implementing Agency	Adoption Date	Implementation Period
OFF-RD LSI-3	Require New Forklift Purchases and Forklift Rentals to be Electric – Lift Capacity <8,000 pounds	CARB	2003	2005-2010
SMALL OFF-RD-1	Set Lower Emission Standards for New Handheld Lawn and Garden Equipment (Spark Ignited Engines Under 25 hp such as Weed Trimmers, Leaf Blowers, and Chainsaws)	CARB	2003	2005
SMALL OFF-RD-2	Set Lower Emission Standards for New Non-Handheld Lawn and Garden Equipment (Spark Ignited Engines Under 25 hp Such As Lawnmowers)	CARB	2003	2006
MARINE-1	Set More Stringent Emission Standards for New Harbor Craft and Ocean-Going Ships	U.S.EPA	2003-2004	2008-2010
MARINE-2	Pursue Approaches to Clean Up the Existing Harbor Craft Fleet – Retrofit Controls, Cleaner Fuels	CARB	2003-2005	2005
MARINE-3	Pursue Approaches to Clean Up the Existing Ocean-Going Ship Fleet – Cleaner Fuels, Incentives for Cleaner Ships, Smoke (Opacity) Limits	EPA	2003-2005	2005-2010
MARINE-4	Pursue Approaches to Reduce Land-Based Emissions at Ports – Alternative Fuels, Cleaner Engines, Retrofit Controls, Electrification, Education Programs, Operational Controls	CARB	2003-2005	2003-2010

TABLE 7-3 (continued)

Control Measure Number	Control Measure Name	Implementing Agency	Adoption Date	Implementation Period
AIRPORT-1	Pursue Approaches to Reduce Emissions from Jet Aircraft – Cleaner Engines/Retrofit Controls, Aerodynamic Design, Fleet Purchase Strategy, Emission-Based Landing Fees, Cleaner Fuel, Operational Measures	U.S.EPA	2004-2009	2008-2015
<u>Fuel Reformulation</u>				
FUEL-1	Set Additives Standards for Diesel Fuel to Control Engine Deposits	CARB	2006-2009	2006-2010
FUEL-2	Set Low-Sulfur Standards for Diesel Fuel for Trucks/Buses, Off-Road Equipment, and Stationary Engines	CARB/EPA	2003-2005	2006 (CARB) 2010 (U.S.EPA)
<u>Consumer Products</u>				
CONS-1	Set New Consumer Products Limits for 2006	CARB	2004	2006
CONS-2	Set New Consumer Products Limits for 2006-2010	CARB	2006-2008	2008-2010
<u>Fueling and Vapor Recovery</u>				
FVR-1	Increase Recovery of Fuel Vapors from Aboveground Storage Tanks	CARB	2003	2007
FVR-2	Recover Fuel Vapors from Gasoline Dispensing at Marinas	CARB	2006-2009	2006-2010
FVR-3	Reduce Fuel Permeation Through Gasoline Dispenser Hoses	CARB	2004	2007
<u>Pesticide</u>				
PEST-1	Pesticide Measure	DPR	TBD	1996-2010
<u>CARB/U.S. EPA Long-Term Strategy</u>				
Long-Term	Long-Term Strategy	CARB/EPA	2004-2009	2008-2010

District

The District is responsible for implementing the stationary and mobile source control measures proposed by the District. As shown in Table 7-3, stationary source control measures will be implemented primarily through District rules and regulations as specified in federal and state law.

As indicated in Chapter 4, several key approaches are proposed for implementing the stationary source emission reduction measures. Specifically, the Plan proposes to use source-specific control approaches and market incentives to implement most of the stationary source measures. Chapter 4 and Appendix IV-A provide more detail relative to these implementation approaches.

Transportation Control Measures

The region's long-range transportation blueprint, its triennial Regional Transportation Plan (RTP), and the shorter-term programming needed to fund the improvements, the Regional Transportation Improvement Program (RTIP), together form the foundation for improving transportation system performance while at the same time assuring the timely attainment of air quality goals within the SCAB. The RTIP is the vehicle used to implement the goals of the long-range RTP and provides for timely implementation of TCMs for the SCAB. The RTIP is a short-term document covering six years, and it must be updated at least every two years. As the biennial element of the RTIP is revised, the list of fiscally constrained projects, or, rather, projects for which funding has been identified, will be updated.

Implementation of the transportation control measures currently under consideration is predicated on the assumption that the following three Innovative Financial Strategies adopted by SCAG's Regional Council (RC) will be implemented as expected.

- State sales tax on gasoline revenues will continue to be dedicated to transportation-related projects, as embodied in Proposition 42.
- A share of the county sales tax will be dedicated to transportation-related projects where necessary.
- State motor vehicle fuel excise tax rate and user-fees will be appropriately indexed, to maintain their historic purchasing power.

Local Governments and SCAG

Local governments (cities and counties) are also responsible for helping to provide supportive actions through participation in voluntary programs. Local governments and

transportation agencies are also responsible for implementing several measures in the Plan including, but not limited to, the transportation improvements called for in the Plan. SCAG is responsible for helping local governments coordinate their efforts and for ensuring that the region's transportation projects, programs and plans conform to the SIP.

Congestion Management Program Linkage to the AQMP

The Congestion Management Program is a comprehensive strategy to relieve traffic congestion and maintain levels of service on roadways within the Southern California region. SCAG has facilitated efforts by counties and sub-regions to develop County-level Congestion Management Plans (CMPs) in consultation with regional and sub-regional transportation providers, local governments, Caltrans, and the District.

The CMPs interlink with the AQMP in several areas, but most particularly through the TCMs. Most TCM projects identified in the RTIP are designed to help relieve congestion at the local level. Thus, implementation of the AQMP helps local governments tackle congestion, which, in turn, reduces emissions from idling vehicles or the number of vehicles traveling on congested roadways, and also helps maintain the level of service standards. At the same time, the CMP process provides local governments a mechanism to contribute to the regional effort toward attaining the NAAQS.

However, local governments receive credits for emission reductions associated with the implementation of CMPs only to the extent they are real, quantifiable, enforceable, and have not been included in the AQMP baseline as part of the RTP. In addition, the process gives local governments an opportunity to work cooperatively with their CTCs and subregional agencies to craft integrated trip reduction strategies to meet the CMP trip reduction requirements.

The CMP process and the AQMP are further linked through the local capital improvement program. This required element of the CMP must be consistent with the county and Regional Transportation Improvement Program, which in turn must be consistent with the RTP. The relationship between the air quality management plans and the regional transportation planning process is circular. Thus, for example, the 2001 RTP must conform to the 1997 AQMP, and, in turn, forms the basis for the 2002 RTIP, and both these, together, provide the context for the current AQMP.

Southern California Economic Partnership (The Partnership)

The Partnership is a non-profit organization with an 18-member Board of Directors assigned the mission of accelerating the deployment of advanced transportation technologies (ATTs) throughout Southern California. It was established out of the needs

of the SCAG Regional Mobility Element and the 1994 AQMP as an effective implementation organization for advanced transportation technology strategies.

The Partnership, through its public/private participatory structure, is capable of providing networking and guidance to those parties interested in the deployment of advanced transportation technologies throughout Southern California. “Technology Stakeholder Workshops” on each technology are held on a regular basis, usually at the District or at SCAG offices, to discuss implementation barriers and assist in the development of deployment and marketing strategies. It has in effect become a clearinghouse of ATT information and progress.

To aid Southern California cities and counties in ATT deployment, The Partnership has developed “Model City Starter Kits” for each of the technologies. These books provide goals and objectives, implementation worksheets, model policies, model resolutions, building codes, product/service technology updates, infrastructure suggestions and requirements, training and safety requirements, case studies, funding opportunities and an activity recognition program. The Partnership provides these comprehensive guide books free to each Southern California community and conducts workshops and presentations to encourage participants to use ATTs. It also develops and distributes ATT newsletters and promotional materials to heighten awareness and garner unified understanding and support for the technologies from both the public and private sectors. Most of this information is also presented on The Partnership’s web site (www.the-partnership.org) which is continuously updated with deployment achievements throughout the region.

Workshops and Outreach

To generate additional interest and understanding of technology deployment, The Partnership occasionally hosts technology workshops at the District and other convenient locations for local elected officials, city planners and managers, with considerable private sector involvement and support. In addition to these workshops, The Partnership also: 1) makes presentations to cities, schools and organizations; 2) distributes monthly technology “News Flashes” to all stakeholders via email or published on The Partnership’s web site; and 3) attends the meetings of related organizations and project developers.

Information Distribution and Industry Networking Support

Since the Partnership works closely with the stakeholders in supporting transportation technologies, it has become a de facto clearinghouse of ATT information. In this capacity, it is suited to direct and introduce interested participants to other stakeholders with similar goals and into the formation of productive and mutually beneficial public/private partnerships.

TECHNOLOGY ADVANCEMENT

The District's Technology Advancement Office (TAO) sponsors public-private research and development partnerships in order to identify and promote low- and zero-emissions technologies for both stationary and mobile sources. The TAO has several programs through which advanced mobile and stationary source control strategies are funded, researched, and commercialized. One such program is the Carl Moyer Program which is a state-wide funding program that provides monies to purchase low-emission on- and off-road vehicles and equipment and marine engines. A second program overseen by TAO is the RECLAIM Executive Order Fee Program which channels monies collected from funds established under Executive Order and Rule 2020 – RECLAIM Reserve to fund projects with approved protocols established under Regulation XVI – Mobile Source Offset Programs. The TAO also administers projects funded through the Mobile Source Air Pollution Reduction Review Committee (MSRC). The MSRC, which was established in 1990 with the adoption of Assembly Bill 2766, funds projects to reduce air pollution from motor vehicles as needed for implementing the California Clean Air Act of 1988. A fourth mechanism where advanced mobile and stationary source control strategies are funded, researched, and commercialized comes from government agency (e.g., CARB, CEC, U.S. EPA, and DOE) grants and cost-sharing dollars.

Table 7-4 lists some key recently-completed or currently-underway projects sponsored by the TAO to facilitate development and commercialization of low-polluting technologies. Some of the stationary source projects do not have specific linkages to the control measures but serve as future technologies that may be available to meet current regulations with future compliance dates or AQMP control measures.

SCAQMD Clean Fuels Program – Technology Advancement Plan

SCAQMD Cleans Fuels Program – Technology Advancement Plan is a formal plan required by state law to be adopted by the District's Governing Board. The most recent update of the Technology Advancement Plan for 2002 focused on potential projects for research, development, demonstration, and commercialization of clean fuels technologies and advanced technologies that may reduce emissions and help meet the clean air goals of the District. The key areas of the 2002 Technology Advancement Plan are summarized below.

TABLE 7-4
Currently or Recently Completed TAO Projects

Project Description	Pollutant(s)	Goal(s)	Associated Control Measure
<u>Alternative Fuels – On-Road Applications</u>			
Development & Demonstration of Advanced Natural Gas Engine Electronic Controls	VOC, NO _x , CO, PM10	A, B, C	ON-RD HVY-DUTY-3
Establishment of Design Practices for CNG Trucks & Requirements of the Use of Methane Detection on NG Trucks	VOC, NO _x , CO, PM10	A, B	ON-RD HVY-DUTY-3
On-Road Development of Enhanced Caterpillar C-12 Dual-Fuel Truck Engine	VOC, NO _x , CO, PM10	A, B, C	ON-RD HVY-DUTY-3
Evaluate Durability of PM Retrofit Trap on a School Bus	VOC, NO _x , CO, PM10	A, B, C	ON-RD HVY-DUTY-3
Demonstration of Fischer Tropsch Synthetic Fuel in Heavy & Medium-Duty Vehicles; and Advanced Diesel Fuels, Engines, NO _x Absorber Catalyst & Diesel Particulate Filter Project	VOC, NO _x , CO, PM10	A, B, C	ON-RD HVY-DUTY-3
Development of Very Low-NO _x Heavy-Duty Natural Gas Engine	VOC, NO _x , CO, PM10	A, B, C	ON-RD HVY-DUTY-3
<u>Alternative Fuels – Infrastructure</u>			
Cosponsor Clean Fuel Infrastructure and Demographic Study	VOC, NO _x , CO, PM10	B	ON-RD HVY-DUTY-3
Cost-share Installation of CNG Fueling Facility	VOC, NO _x , CO, PM10	B	ON-RD HVY-DUTY-3
Technical and Management Assistance for Infrastructure	VOC, NO _x , CO, PM10	B	ON-RD HVY-DUTY-3

- A. Supports technical feasibility
 B. Supports commercialization
 C. Demonstration of current or potential CARB standards or guidelines
 D. Enhances databases (e.g., emission factors, inventories, health data, etc.)

TABLE 7-4
Currently or Recently Completed TAO Projects
(continued)

Project Description	Pollutant(s)	Goals	Associated Control Measure
Development and Demonstration of a Universal Card Reader System	VOC, NO _x , CO, PM10	B	ON-RD HVY-DUTY-3
Advanced Home Refueling Appliance for CNG Vehicles	VOC, NO _x , CO, PM10	B	Long-Term Measure
Construction of Fast-Fill CNG Fueling Station at AQMD Headquarters	VOC, NO _x , CO, PM10	B	Long-Term Measure
<u>Fuel Cell and Hydrogen Technologies</u>			
Prototype Residential Fuel Cell Systems	VOC, NO _x , CO, PM10	A, D	Long-Term Measure
Develop an Improved Electrode for Direct Methanol Fuel Cell Using Magnetron Sputtering Techniques	VOC, NO _x , CO, PM10	A, D	Long-Term Measure
Methanol Fuel Quality Specification Study	VOC, NO _x , CO, PM10	D	Long-Term Measure
Complete Development of Direct Methanol Fuel Cell	VOC, NO _x , CO, PM10	A	Long-Term Measure
Demonstration of a Hydrogen Refueling Station	VOC, NO _x , CO, PM10	A, B	Long-Term Measure
<u>Electric and Hybrid Electric Technologies</u>			
Study of Electric Hotel Shuttle Service at LAX	VOC, NO _x , CO, PM10	C	----
Evaluate Hybrid Electric Vehicles	VOC, NO _x , CO, PM10	E	----
Develop & Demonstrate Advanced Valve Regulated Lead-Acid Batteries	VOC, NO _x , CO, PM10	A, B, C	----
Development & Demonstration of Grid-Rechargeable Hybrid-Electric Utility Service Truck & Mobile Electric Power Supply	VOC, NO _x , CO, PM10	A, B, C	----
Evaluate Hybrid Electric Vehicles	VOC, NO _x , CO, PM10	B, C	----

- A. Supports technical feasibility
 B. Supports commercialization
 C. Demonstration of current or potential CARB standards or guidelines
 D. Enhances databases (e.g., emission factors, inventories, health data, etc.)

TABLE 7-4
Currently or Recently Completed TAO Projects
 (continued)

Project Description	Pollutant(s)	Goals	Associated Control Measure
Development of Dual Inductive/Conductive Charger Bracket to Allow Reduction of EV Charging Infrastructure Costs	VOC, NO _x , CO, PM10	A, B, C	----
<u>Alternative Fuels – Off-Road Applications</u>			
Zinc/Air Battery-Powered Commercial Grounds Care Equipment	VOC, NO _x , CO, PM10	A, B	OFF-RD LSI-2 SMALL OFF-RD-2
Demonstration of Particulate Trap Technologies	VOC, NO _x , CO, PM10	A, B, C, D	OFF-RD CI-1 OFF-RD CI-2
<u>Emissions Analysis and Health Effects</u>			
Heavy-Duty Vehicle Fleet Characterization for NO _x & PM Emissions	VOC, NO _x , CO, PM10	D	ON-RD HVY-DUTY-3
Fast-Response On-Board NO _x Sensors for Heavy-Duty Vehicles	VOC, NO _x , CO, PM10	A, C, D	ON-RD HVY-DUTY-3
Analysis of the Effectiveness of On-Board Diagnostics II	VOC, NO _x , CO, PM10	C, D	LT/MED-DUTY-2 ON-RD HVY-DUTY-3
Evaluation of the Effects of Biodiesel & Other Clean Fuel Blends on Exhaust Emission Rates & Reactivity Phase 2	VOC, NO _x , CO, PM10	C, D	Long-Term Measure
Develop On-Road System for Emissions Measurement for Heavy-Duty Trucks	VOC, NO _x , CO, PM10	C, D	ON-RD HVY-DUTY-1
Investigate Emission Rates of Ammonia & Other Toxic & Low-Level Compounds Using FTIR	VOC, NO _x , CO, PM10	C, D	Long-Term Measure
Analysis of Exhaust from CNG-fueled Buses	VOC, NO _x , CO, PM10	C, D	ON-RD HVY-DUTY-3
Chemical Analysis of Exhaust Samples from CNG Buses	VOC, NO _x , CO, PM10	C, D	ON-RD HVY-DUTY-3
Ames Bioassay Analyses on Diesel- and CNG-Fueled Bus Exhaust Samples	VOC, NO _x , CO, PM10	C, D	ON-RD HVY-DUTY-3

- A. Supports technical feasibility
 B. Supports commercialization
 C. Demonstration of current or potential CARB standards or guidelines
 D. Enhances databases (e.g., emission factors, inventories, health data, etc.)

TABLE 7-4
Currently or Recently Completed TAO Projects
(continued)

Project Description	Pollutant(s)	Goals	Associated Control Measure
Study of Children's Pollutant Exposures During School Bus Commutes	VOC, NO _x , CO, PM10	D	ON-RD HVY-DUTY-3
Deployment & Operation of Scanning Mobility Particle Sizers & Low Temperature Tapered Element Oscillating Microbalance in Children's Health Study Communities	VOC, NO _x , CO, PM10	D	Long-Term Measure
Determination of Ammonia and Methane Emissions from Greenwaste Composting	VOC, NO _x , CO, PM10	D	WST-02
<u>Other Advanced Technologies</u>			
Demonstration of School Buses Retrofitted with PM Reduction Technologies	VOC, NO _x , CO, PM10	A, B, C, D	ON-RD HVY-DUTY-3
Evaluation of School Bus Retrofit with Exhaust After-Treatment Devices	VOC, NO _x , CO, PM10	A, B, C, D	ON-RD HVY-DUTY-3
<u>Stationary Sources - Clean Energy Technologies</u>			
Advanced Premixer/Catalytic Combustor for Natural Gas Turbines	VOC, NO _x , CO, PM10	A, B, C	Long-Term Measure
<u>Stationary Sources – VOC and PM Reduction Technologies</u>			
Zero- & Low-VOC Resin Technology for Advance Control Measure Development	VOC, PM10	A, B, C	CTS-07, CTS-10

- A. Supports technical feasibility
 B. Supports commercialization
 C. Demonstration of current or potential CARB standards or guidelines
 D. Enhances databases (e.g., emission factors, inventories, health data, etc.)

Alternative Fuels - Incentives Program

The state Legislature and Governor have recognized the environmental and societal benefits of the Carl Moyer Memorial Air Quality Standards Attainment Program. The District will be administering incentive funds for the replacement of diesel-fueled on- and off-road vehicles including refuse haulers, heavy-duty trucks, transit and school buses, construction equipment, marine and port applications and other vehicles and equipment. New engines, re-powers and retrofits are allowed within the program. This program also helps to commercialize alternative fuel technologies in the real world,

addressing a key goal of the draft 2003 AQMP for emission reductions. The Clean Fuels Program will provide matching funds that are required to implement this program at the local level.

Exhaust emissions from high-emitting diesel-fueled school buses are harmful to children and are a key source of public exposure to toxic diesel particulate matter and smog forming pollutants. There are thousands of older school buses on the road that have remained in service primarily because school districts lack funds to replace them. Since 1999, with the help of state funding, AQMD has approved more than \$43 million to clean up and replace diesel-powered school buses in the Southland. Projects approved include the purchase of 206 compressed natural gas-powered school buses, 87 lower-emitting new diesel buses and the retrofiting of 1,482 diesel buses with particulate emission traps. Recent state budget cuts have resulted in a reduction of about \$2 billion from school budgets, potentially affecting the transition to less-polluting school buses.

The District has recently proposed that 70% of penalty fees collected in CY 2003 be recognized in the "Lower-Emission School Bus Replacement & Retrofit Program Fund" and used to facilitate the acquisition of new CNG buses by school districts and the concomitant reduction or elimination of diesel-fueled school buses. Distribution of the penalty funds for school buses will take into consideration several elements, including, but not limited to, the environmental justice provisions of the Health & Safety Code as amended by AB-1390 (Firebaugh), population distribution among various counties, and the mix of older versus newer buses.

Alternative Fuels - On-Road

Major emission reductions are required in this area, particularly from heavy-duty vehicles. The District has initiated projects for the development of heavy-duty natural gas engines that will emit less than 0.5 g/bhp-hr NO_x and the development of a midsize (30 foot) school bus using a low-emitting natural gas engine. Continued efforts focused on the development of the Next Generation of Natural Gas Vehicles, lower-NO_x emitting heavy-duty natural gas engines, as well as development and demonstration of alternative fuel school buses and other heavy-duty vehicles. Additionally, plans to demonstrate zero-emission technology for idling heavy-duty trucks and trailers were included.

Alternative Fuels - Infrastructure

In 2001, the District funded the development of natural gas refueling sites, and studies on compressors, meters, and home dispensing and liquefaction equipment. Plans to conduct additional studies to enhance the liquefied natural gas manufacturing, distribution, and detection technologies are contained in the 2002 update. Another area of focus will be to develop best practices that can lead to standardization and modularization, as well as develop templates for the design and installation of alternative

fuel re-fueling stations. Natural gas refueling stations that are also capable of refueling hydrogen will be studied. Literature studies on possible station configurations and templates for natural gas and hydrogen refueling stations are contemplated, as well as demonstrating compatible equipment for handling higher pressures. Work on Codes and Standards development is also proposed.

Fuel Cell Technologies

The District has cosponsored the development and demonstration of several fuel cell vehicles. One such project is a 30-foot fuel cell hybrid-electric midsize transit bus that will be operated at a local transit agency and fueled by hydrogen generated from a solar- and wind-powered electrolyzer. The District plans to expand the demonstration of fuel cell vehicles in other conventional and non-conventional fleets. The plan also proposed to co-sponsor studies to develop more realistic demonstration specifications for fuel cell transit buses, specifically to evaluate realistic operational availability, training, on site service, and warranty issues. In the area of hydrogen fueling infrastructure, the plan included development and demonstration of distributed hydrogen production and refueling stations for fleet and commercial uses, as well as home refueling appliances. Furthermore, the plan included additional work on cosponsoring studies for certifying hydrogen components and subsystems, as well as the personnel involved in the installation, operation, and maintenance of hydrogen systems.

Electric and Hybrid Electric Technologies

Electric and Hybrid Electric Technologies, including demonstration of light-duty and heavy-duty electric and hybrid-electric vehicles, as well as refinement of charging technologies and advanced energy storage systems were proposed in the 2002 Plan. The District will continue the development and demonstration programs, with focus on a variety of fleets, including transit buses and heavy-duty trucks. There will also be continued focus on advanced energy storage devices such as ultra-capacitors, lithium-technology, and high-speed flywheel battery applications. The TAO also plans to upgrade hybrid-electric development and demonstration projects with current, better-performing components resulting in enhanced reliability and lower emissions, as well as plug-in recharging capability.

Alternative Fuels - Off-Road Applications

The District plans to evaluate various off-road technologies. Some of these include demonstration of low- and zero-emission locomotives, low-emission alternative fuel off-road engines using technology developed for on-road engines, including retrofit equipment. Another area of focus will be the use of gas-to-liquid fuels, emulsified fuels, bio-diesel, and low-sulfur diesel fuels in construction equipment and other off-road uses. Demonstration of particulate control technologies is a high priority area. The plan also

includes projects pertaining to low-emission marine engines, including hybrid-electric technology.

Stationary Sources

The District funded numerous projects for the use of microturbines for stationary power generation. The TAO plans to support this effort in assembling and demonstrating portable microturbine technology that utilizes natural gas or propane. Another distributed generation project of interest will be the demonstration of a hybrid fuel cell/microturbine power plant that could provide electricity at much higher efficiencies than conventional generator systems. Another area of focus will be the development and demonstration of emulsified fuel technology for portable power generators. The 2002 plan also included projects focusing on technology assessments of future VOC limits in various District rules, as well as additional development and demonstration of near-zero or zero-VOC technologies for solvents, coatings, and adhesives.

The District has funded several technology assessments as part of its obligation under recent rule amendments. These assessments include two studies conducted on low VOC coating limits for Rule 1113 – Architectural Coatings. The NTS Laboratory two-year real time outdoor exposure study evaluated the exposure characteristics of low-VOC coatings as compared to conventional products. A second study was conducted by KTA Tator which compared the performance characteristics of current low-VOC coatings to higher-VOC coatings in the same category. In addition to these studies, the District is sponsoring a technology assessment of the availability and performance characteristics of low-VOC solvents complying with the future limits of Rule 1171 – Solvent Cleaning Operations. This assessment is scheduled to be completed in 2004. The District will also be conducting an assessment to determine whether the retrofit requirements for boilers between 400,000 and 1 million BTU per hour under Rule 1146.2 will be available by the time the requirements go into effect in 2006.

IMPLEMENTATION SUPPORT ACTIVITIES

Implementation of the draft 2003 AQMP will require support activities sponsored by the District and SCAG. These efforts are described in the following subsections.

District Assistance and Outreach Programs

Since the adoption of the 1991 AQMP the District has provided assistance to the agencies charged with implementing the Plan. A key accomplishment was the District's CEQA Air Quality Handbook to assist local governments in assessing and mitigating air quality impacts from projects within their jurisdiction.

The District has designed and implemented a City Executive Outreach Campaign to raise awareness among city managers and administrators of District programs affecting them and the types of District resources available to them. Areas being covered during this process include:

- Fleet rule compliance and funding opportunities, including technical assistance available
- Complaint Process/Constituents Issues
- Building Department Services
- No-cost, no-fault, compliance assistance for small businesses
- Training programs for city and county building and safety staff, and
- Incorporation of a model air quality element into General Plans.

Business Assistance

The District has initiated several programs to assist businesses that must comply with the requirements promulgated in the Plan. These programs include: permit streamlining practices, interaction with small and medium-sized businesses, source education programs, and compliance assessment programs.

The Public Advisor assures business input to the District's policy makers through community workshops, industry-specific meeting, and ethnic business working groups. Fee Review and other technical assistance helps companies resolve issues in a cooperative manner.

The District's Small Business Assistance office helps owners/operators participate in the District's policy and rule development process and helps them comply with applicable requirements. It offers permit application and processing assistance as well as compliance and financial assistance.

The District assists small business in qualifying for a state loan guarantee program for equipment that complies with District requirements. Under the California Capital Access Program (CalCAP), the District will pay the loan fees (generally 2 to 3.5% of the loan amount) businesses would normally have to pay to obtain a bank loan. This is a loan insurance program that helps businesses with limited credit qualify for a bank loan. The loan guarantee may be approved for up to \$250,000.

SCAG Assistance

SCAG has provided significant assistance and outreach to local governments in understanding, assessing and implementing programs to address TCMs and associated air quality issues. SCAG provides funding to its thirteen subregions to help develop

policies and strategies and prepare monitoring programs which address TCMs, air quality and mobility requirements--identifying locally sensitive implementation options and continuing to develop monitoring programs to report progress.

In cooperation with the District, SCAG helped create and launch the now independent Southern California Economic Partnership (The Partnership), as discussed previously in this chapter. SCAG continues to participate in an active role to implement new strategies to improve air quality and mobility.

MONITORING

The draft 2003 AQMP sets the course for attaining the federal and state air quality standards in the Basin. As the Plan is implemented, it is essential to periodically assess the effectiveness of the air pollution control programs in reducing emissions, and to determine whether or not the Basin is still proceeding along the course set forth in the AQMP. Monitoring the AQMP's effectiveness will also be an integral part of preparing the annual rule work plan. The monitoring report will provide the necessary information to monitor for maximum feasible measures and expeditious adoption schedule required by the CCAA.

It is equally important that the people who live and work in the Basin be kept informed of the efforts being undertaken to improve air quality, and of the extent to which air quality is improving as a result. The monitoring report can provide this kind of feedback to the Basin's residents.

Every third year, the District is required to assess the overall effectiveness of its air quality program, including determining the quality of emission reductions achieved, and the rate of population and industrial- and vehicular-related emissions growth compared to the assumptions and goals contained in the Plan. The District is also required to assess the extent of air quality improvement, based upon ambient pollutant measurements and best available modeling techniques. These reports are required by law to be adopted by the District at a public hearing and to be transmitted to the CARB.

Significant enhancements have been incorporated into the modeling approach for the draft 2003 AQMP in order to minimize uncertainty and improve performance. These include use of the most up-to-date scientifically and U.S. EPA accepted ozone models and air chemistry modules that are currently available. Chapter 5 and Appendix V of the draft 2003 AQMP provide a completed discussion of the enhancements and improvement to the Plan's modeling approach.

The federal Clean Air Act also requires nonattainment areas, such as the Basin, to document “reasonable further progress” in achieving incremental reductions of air pollution.

SCAG, with the assistance of county transportation commissions and subregions, prepares the portion of the monitoring reports that pertain to local government transportation and land use measures and submits those portions to the District for inclusion in the full monitoring reports.

CARB and U.S. EPA will also be responsible for monitoring their portion of the state and federal element of the Plan.